



THE OFFICIAL TEXAS HURRICANE GUIDE

COASTAL BEND EDITION

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REMEMBERING CARLA
50 YEARS LATER



METEOROLOGIST
BILL VESSEY

CAITILIN ESPINOSA

DAVE COCHRAN



3 kiii.tv.com
The South Texas News Leader.

info@coastalguardiansoutreach.org
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Introduction

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TEXAS DEPARTMENT OF PUBLIC SAFETY

5805 N. LAMAR BLVD • BOX 4087 • AUSTIN, TEXAS 78773-0001
512/424-2000

www.txdps.state.tx.us



STEVEN C. McCRAW
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LAMAR BECKWORTH
CHERYL MacBRIDE
DEPUTY DIRECTORS



COMMISSION
ALLAN B. POLUNSKY, CHAIR
ADA BROWN
JOHN STEEN
CARIN MARCY BARTI
A. CYNTHIA LEON

Dear Colleagues,

Hurricanes can be devastating to coastal areas, with powerful impacts from storm surge, high winds, tornadoes, and flooding. It is imperative to prepare for each type of hurricane hazard. Advanced planning and preparation are essential to protecting property, reducing risk and ultimately saving lives.

For these reasons, your local National Weather Service, the Division of Emergency Management of the Texas Department of Public Safety, and other key partners, urge residents of coastal communities to read and study this comprehensive Hurricane Guide.

Thousands of individuals in local, state and federal agencies, as well as voluntary organizations and the private sector, are deeply committed to keeping Texans safe when tropical storms threaten our coastal areas. But we need your help as well.

It is critical for coastal residents to take time to develop a family disaster plan, to review emergency preparations and checklists regularly, to build disaster supply kits in waterproof, easy-to-carry containers, and to stay aware of current weather situations by monitoring NOAA weather radio and local broadcasts.

The Official Texas Hurricane Guide is a roadmap that provides information on the supplies you will need and the actions you should be prepared to take as a storm moves in. It is intended as a user-friendly resource with specific instructions for what to do each step of the way—before, during, and after the storm. It also provides information on ways to improve protection for your home and property.

Please use this guide to learn as much as possible about how to prepare for our most dangerous storms. I hope you will continue your dedicated support of this key initiative.

Sincerely,

A handwritten signature in black ink, appearing to read "W. Nim Kidd".

W. Nim Kidd, CEM®
Assistant Director
Texas Department of Public Safety
Chief
Texas Division of Emergency Management

EQUAL OPPORTUNITY EMPLOYER
COURTESY • SERVICE • PROTECTION

About the Hurricane



Hurricanes form over warm ocean waters, like those found in the Gulf of Mexico. The hurricane season starts June 1 and ends November 30. The peak threat for the Texas coast exists from August through September. However, hurricanes can and have struck the Texas coast during every month of the hurricane season.

Left: High resolution satellite image of Hurricane Ike over the northwest Gulf of Mexico. Image--NASA

Below: Historical perspective of hurricane landfalls in Texas since 1851.

Since 1851, 63 hurricanes have struck the Texas coast. That is **one every three years** on average.



Definitions to Know

TROPICAL DEPRESSION: An organized system of persistent clouds and thunderstorms with a closed low-level circulation and maximum winds of 38 mph or less.

TROPICAL STORM: An organized system of strong thunderstorms with a well defined circulation and maximum sustained winds of 39 to 73 mph.

HURRICANE: An intense tropical weather system with a well defined circulation and sustained winds of 74 mph or higher.

TROPICAL CYCLONE: A general term used to describe a tropical depression, tropical storm, or hurricane.

HURRICANE/TROPICAL STORM WATCH: Hurricane or Tropical Storm conditions are possible in the watch area within 48 hours.

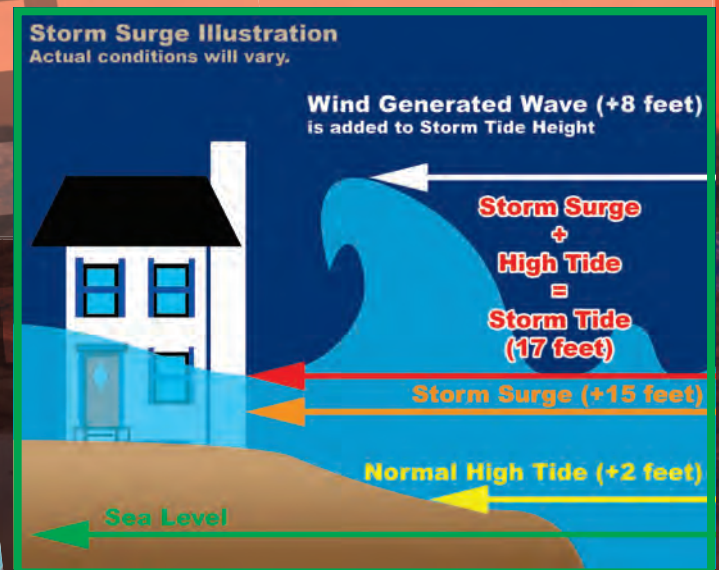
HURRICANE/TROPICAL STORM WARNING: Hurricane or Tropical Storm conditions are possible in the warning area within 36 hours.

Storm Surge

Storm surge is a large dome of water, 50 to 100 miles wide that sweeps across the coastline along and to the right of where the eye makes landfall. The stronger the hurricane winds, the higher the storm surge. The storm surge can be more than 15 feet in major hurricanes. Storm surge poses the greatest threat to life and property for coastal communities.



Computer simulations of a major hurricane landfall clearly show the huge impact a storm surge could have on a low lying coastal community. Communities such as Aransas Pass (pictured to the left) would be completely submerged if a major hurricane made a direct hit.

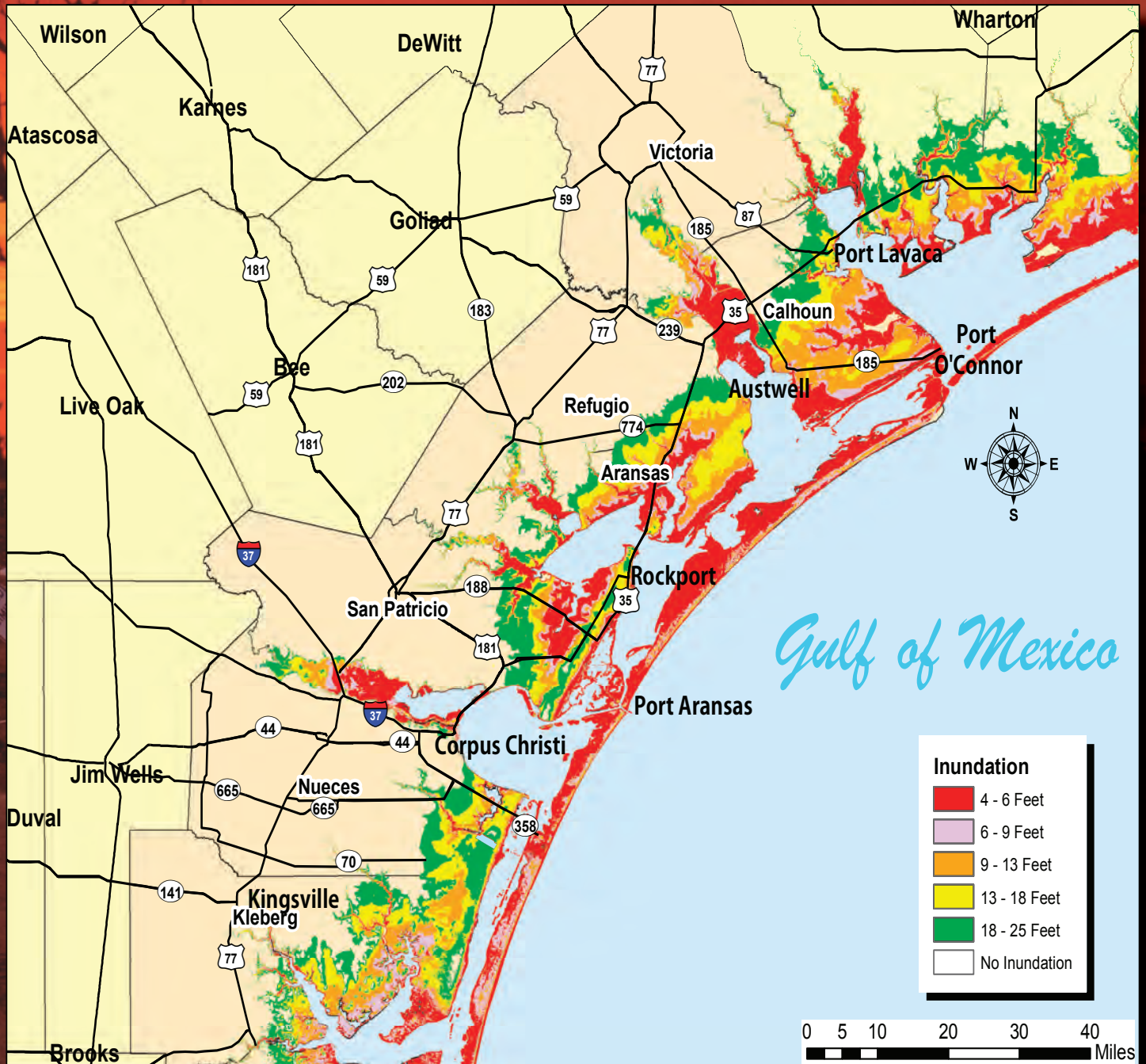


Storm surge from a major hurricane has the potential to submerge and destroy most of the coastal properties in Port O'Connor, Port Aransas, Rockport, and Corpus Christi. Evacuating well inland before a major storm strikes can save your life.

Graphics courtesy of Gordon Wells from the Center for Space Research and Mike Peacock (retired) from the Texas Division of Emergency Management.

Storm Surge

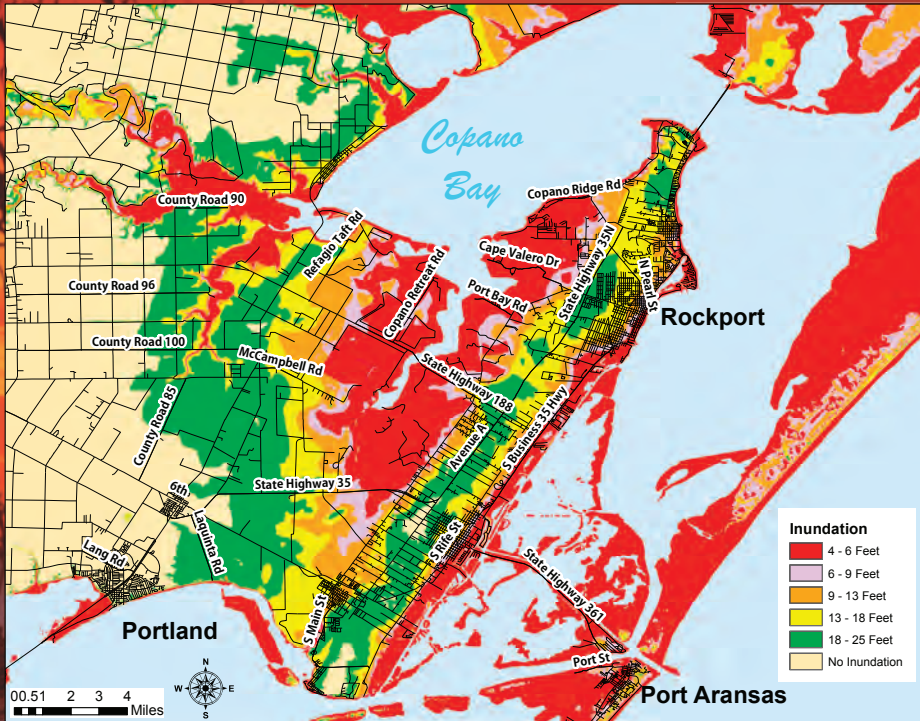
South Texas Storm Surge Inundation Map



Above: This map indicates the potential inundation from a storm surge of the listed height. To determine water depth you must subtract your elevation. Accuracy is +/- 20%.

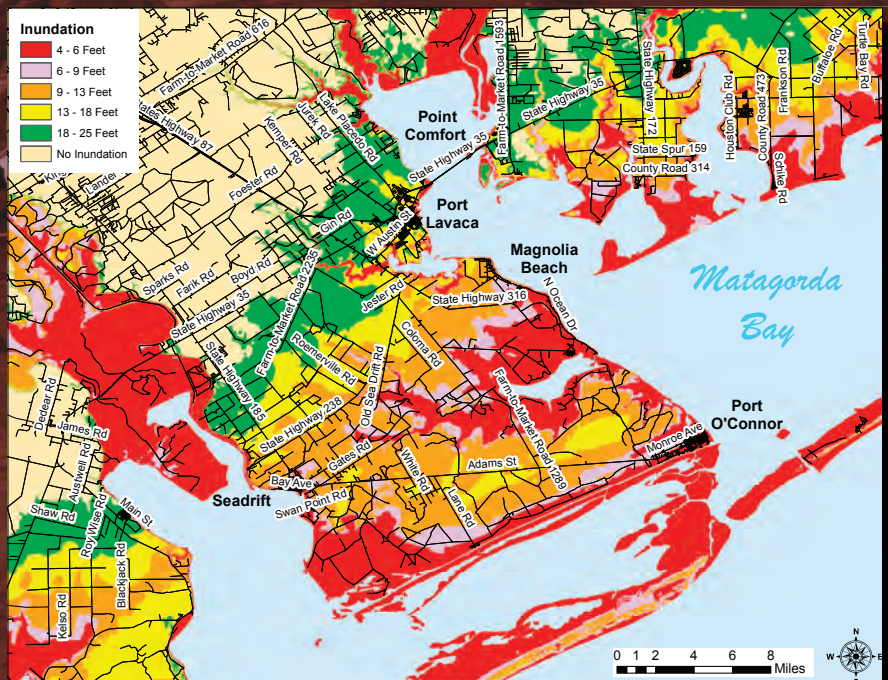
Inundation Maps

Rockport/Port Aransas



These maps show the potential inundation from a storm surge of the listed height. Colors in the reds and oranges indicate the highest danger. To determine water depth you must subtract your elevation. All of these maps have an accuracy of +/- 20 percent.

Port O'Connor



“The greatest potential for loss of life related to a hurricane is from the storm surge.”

- National Hurricane Center

Flooding and Tornadoes

Inland Flooding



There are numerous examples of significant flooding caused by land-falling tropical cyclones in Texas. Storms with a slow forward motion are the most dangerous as heavy rains persist for a longer period of time. Tropical Storm Allison was such a storm. Allison meandered across Southeast Texas for several days in early June 2001, dumping 35 to 40 inches of rainfall in some areas. These extreme rainfall totals produced devastating flooding especially across the Houston metropolitan area. Of the 23 deaths attributed to Allison in Texas, 20 were related to persons who drowned while driving or walking through flood waters.

Five Practical Ways to Protect Yourself and Others From the Dangers of Inland Flooding

- **Protect Your Personal Documents and Special Items**
 - ✓ Store valuables in plastic tubs with locking tops
 - ✓ In case of evacuation, you should be able to secure and move all your valuables within 15 minutes
- **Buy Flood Insurance: A Plan for Replaceable Items**
 - ✓ The National Flood Insurance Program (NFIP) is available from an insurance agent or the NFIP
 - ✓ For more information see www.floodsmart.gov
- **Flood Proof Your Home - Take Steps to Minimize Flood Damage**
 - ✓ Shut off the main circuit breaker to prevent short circuiting and eliminate the threat of electrocution
 - ✓ Raise outside air conditioning units onto platforms above ground level
 - ✓ Store rarely used or expensive items in the attic or on high shelves
- **Develop a Family Flood Plan**
 - ✓ Develop a plan of action to keep from panicking during an emergency
 - ✓ Have an evacuation route and alternatives planned in the event you are asked to evacuate
 - ✓ Communicate your plans with friends or family outside of your home area
 - ✓ Battery powered radios or televisions can be used in the event of a power outage
- **Never Drive on Flooded Roads**
 - ✓ Driving into flooded roadways puts your life and the lives of others at risk
 - ✓ Unless told to evacuate, you are probably safest staying at your current location
 - ✓ **If you encounter flood waters when driving, Turn Around, Don't Drown!**

Tornadoes

Tropical cyclones also produce tornadoes. These tornadoes most often occur in thunderstorms embedded in rain bands well away from the center of the hurricane; however, they can also occur near the eyewall. Tornadoes produced by tropical cyclones are relatively weak and short-lived, but still pose a threat.



Destructive Winds



Above: Wind damage to a billboard from Hurricane Lili in October 2002.

Hurricane force winds of 74 mph or more can destroy buildings, mobile homes, trees and power poles. Debris such as signs, roofing material, siding, and small items left outside become flying missiles in a hurricane. The strongest winds occur in a region of the hurricane called the eyewall. Wind gusts in the right side of the eyewall are the most destructive. Hurricane force winds can be felt as far as 150 miles from the coast.

It is imperative to ensure your home or business is well constructed to minimize the damage from the wind. See the Planning and Preparing section in this guide for cost effective home improvement tips that can help you reduce your damage from a hurricane.



MOBILE HOME RESIDENTS MUST EVACUATE!

- No mobile home or manufactured home - no matter how new it is - can provide safe shelter from hurricane force winds.
- Straps or other tie-downs **will not** protect a mobile home from the high winds associated with a hurricane.
- Mobile home residents **must evacuate** when told to do so by local authorities.



Saffir Simpson Hurricane Wind Scale



- | | | | |
|--------------|----------------------|--------------|----------------------------|
| ● Category 1 | Winds 74 to 95 mph | ● Category 4 | Winds 131 to 155 mph |
| ● Category 2 | Winds 96 to 110 mph | ● Category 5 | Winds greater than 155 mph |
| ● Category 3 | Winds 111 to 130 mph | | |

Planning and Preparing

Preparing Your Home Before the Storm

Proper hurricane preparations made ahead of time will not completely protect your property from damage. However, following a few simple tips may greatly reduce the damage to your home and property.

Right: Hurricane clips attaching roof trusses to side walls.



Important Home Preparation Tips

Elevation Matters

- Know the elevation of your home! Are you in a flood and/or evacuation zone?

Mobile Homes

- Check tie-downs for rust or breakage.
- Residents of mobile homes must evacuate when told to do so!!

Landscaping

- Trim trees, shrubbery and dead limbs, especially ones close to your home.
- Repair or replace broken or damaged fences.
- Shredded bark is preferred instead of small gravel or stone bedding.

Roofing

- Inspect the roof for loose tiles, shingles or debris. Consider replacing old or damaged shingles with new ones rated for hurricane force winds.
- Check for and/or install hurricane clips to secure roof trusses to side walls.
- Clear loose and clogged rain gutters and downspouts.

Doors

- Reinforce garage doors and tracks or replace with a hurricane tested door. (See above image)
- Reinforce double entry doors with heavy duty foot and head bolts.
- Use a security dead bolt with a one inch minimum bolt length.
- Doors may be shuttered, but one entry must be left easily accessible.

Windows

- If possible, install tested/manufactured hurricane shutters.
- Inspect existing shutters to ensure they are in good working order.
- Alternative: Use 5/8" or greater exterior grade plywood secured by 2 1/2" screws and/or special clips. Obtain wood and fasteners, cut wood to size, pre-drill holes and place anchors on homes.
- Store shutters or plywood lying flat to avoid warping when not in use.

Planning and Preparing



Business and Employee Preparation



Tips for Businesses

- Establish a temporary location for business operations in case your facility is damaged.
- Give employees enough time to secure their homes and families.
- Consider paying employees before they leave to prepare their homes.
- Identify and protect vital records. Backup and store key files off site.
- Protect electronic equipment from possible water damage.
- Have extra cash and blank checks in case extra money is needed after the storm.
- Identify a safe room for employees who must remain in the building.
- Develop a 24-hour emergency contact with phone numbers of key employees.
- Set up telephone numbers for employees to check in and receive company information.

Protecting Your Boat - Marine Preparations



Tips for Boat Owners

- Check your marina contract for policies and procedures for hurricanes.
- Check with the manufacturer for proper ways to secure your boat during a storm.
- Consider moving arrangements well in advance of an approaching storm.
- Trailer boats should be removed from the water and securely stored at least 48 hours before a hurricane is expected to make landfall.
- Purchase necessary hurricane materials such as additional mooring lines, crew anchors, fenders, fender boards, chafing gear, and anchors.
- Safe storm moorings should consist of good condition ropes of sufficient diameter and length, with at least three or four substantial anchor points.
- Do not moor parallel to bank. Receding tides often capsize boats in this type of anchorage.

Special Needs

General Preparations for People With Special Needs



FEMA News Photo

Preparation in advance of hurricane season is essential, especially for people with special needs. It is essential that a destination is identified ahead of time that can accommodate people with special needs. Shelters should be considered as a **last resort** when people with special needs evacuate because many shelters cannot provide the attention required. Assisting elderly neighbors and acquaintances with pre-hurricane preparations is encouraged.



Important Special Needs Tips

- Identify with whom you will stay in the event an evacuation becomes necessary.
- Make arrangements for transportation in the event you evacuate. Make sure your transportation can accommodate any equipment or other supplies that need to be taken with you.
- Make sure you have the following items that should be stored in advance:
 - ✓ Extra copies of your prescriptions in case your physician's office is damaged and not operational.
 - ✓ At least a 1 month supply of medications.
 - ✓ Identification.



Transportation Assistance Registry

If you will need help evacuating when a hurricane threatens, dial 2-1-1 to register in advance for a ride

Dial 2-1-1 as soon as possible...

- Before the start of hurricane season (June 1)
- If you cannot drive and cannot arrange transportation
- If you have a disability or special health care need and require assistance to get out
- If you do not have a vehicle and you have no one else to help you evacuate

Is someone going to pick me up or call me when a hurricane threatens?

Emergency evacuations are handled different in every community. When a major hurricane threatens, local emergency managers will make every attempt to evacuate someone who does not have the ability to evacuate themselves, if there is enough time to do so safely. Once a hurricane enters the Gulf, individuals should pay close attention to local media to determine when and how evacuations will occur.

Pets and Livestock

Preparing for Your Pet's Safety

Your pet should be part of your overall hurricane preparation plans. Below are a few important things to help you prepare:

- Make sure your pet's vaccinations are current and have proof they are current. **DO NOT** assume that a public shelter or hotel will accept your pet.
- Be sure to have a current photo of your pet.
- Each animal should have a properly sized pet carrier. The carrier should be large enough for the animal to stand up and turn around.
- Make sure your pet has a proper ID collar.
- Pack enough food and bottled water for the duration of your evacuation. **DO NOT** let your pet eat food or drink water from outside that may have become contaminated.
- Be sure to pack all medications your pet may need along with a muzzle, collar, leash, paper towels, and trash bags.



Preparations for Livestock



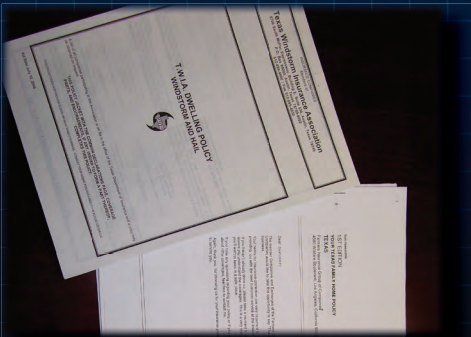
- Ensure all animals have some form of visible identification.
- Evacuate animals whenever possible. Arrangements for evacuation, including routes and host sites, should be made in advance.
- The evacuation sites should have or be able to readily obtain food, water, veterinary care, handling equipment, and facilities.
- Obtain vehicles and trailers needed for transporting each type of animal. Make available experienced handlers and drivers.

- If evacuation is not possible, a decision must be made whether to move large animals to available shelter or turn them outside. This decision should be determined based on soundness and location of the shelter (structure).
- When necessary, move livestock to higher ground and deny access to flood prone pastures, barns, and other structures.
- It is important that livestock have plenty of food and clean water.

Insurance Tips

Insurance Tips - Before the Storm

- When shopping for insurance, get quotes from different companies and consider financial strength and history of complaints from each company.
- Ask agents for discounts if available.
- New and existing policies **will not be written or modified** when a storm nears the Gulf of Mexico.
- Make sure you fully understand what perils are covered and excluded in your policy.
- Make sure your coverage is adequate to replace your home and contents in today's dollar.
- Determine whether your policy covers additional living expenses for a temporary residence if you are unable to live in your home because of damage from a disaster.
- **DO NOT** cancel an old policy until you have a new policy in effect.
- Before hurricane season, prepare detailed written and/or photographic inventory of your home's contents and store it in a safe place with your policy.
- If you evacuate or choose to leave your home for safety, make sure to take the written and photo inventory with you, as well as all insurance policies (auto, home, life, etc.)
- If your insurance company does not cover flood or windstorm perils, ask about coverage through the Texas Windstorm Insurance Association or the National Flood Insurance Program.



Important Web Information



National Flood Insurance Program

www.floodsmart.gov

Texas Windstorm Insurance Association

www.twia.org

Texas Department of Insurance

www.tdi.state.tx.us/consumer

1-800-252-3539 (Consumer Help Line)

Insurance Tips - After the Storm

- Give prompt written notice to your insurance company.
- If you cannot be easily contacted, give your insurance company the contact information of a trusted friend or relative who can reach you if necessary.
- Photograph or videotape damaged structures and all damaged property. Make a list of damaged or lost items.
- **DO NOT** throw out damaged property before your adjuster has inspected the debris unless it is a health hazard or impedes local cleanup.
- Protect your property from further damage.
- Keep an accurate record of temporary repair and living expenses if a loss of use is suffered.
- Along with insurance adjuster estimate for repairs to home, obtain two or more contractor estimates. Estimates must be broken down per line item.
- Claim advancements are made to the policy holder for home repairs, personal property and living expenses. Final payments are made only after completed repairs and adjuster review.

Contact Info/Supply Kit

The Coastal Bend - Texas Chapter of the American Red Cross recommends that you have the following items in your Hurricane Supply Kit. Do not forget to have a family meeting before hurricane season and review your communication information and evacuation plan. Make sure the contact information such as home, work, school, cell phone numbers, and your "Out of Town" contact person's information is current.



**American
Red Cross**

Coastal Bend-Texas Chapter

Emergency Contact Information

Out of Town Contact Address:

Out of Town Contact Phone Number:

Work Telephone Number:

Cell Number/Spouse Cell Number:

Children Cell Number:

School Telephone Number:

Doctor Telephone Number:

Bank/Credit Card Telephone Number:

Insurance Company Information:



HURRICANE SUPPLY KIT



- At least a 7-day supply of non-perishable food and a manual can opener
- At least a 7-day supply of water. One gallon per person per day is recommended
- Battery powered portable television or radio with extra batteries
- Flashlight with extra batteries
- First Aid kit and manual
- Sanitation and hygiene items such as instant hand sanitizing gel, moist towelettes, toilet paper, and feminine hygiene products
- Matches in a waterproof container
- Whistle
- Kitchen accessories and cooking utensils
- Cash
- Extra clothing, blankets, and sleeping bags
- Photocopies of identification, insurance, prescriptions, household inventory, credit cards, and your latest utility bill
- CD or photocopies of important documents such as birth/marriage certificates and titles
- Prescription medications, eyeglasses, contact lens solution, and hearing aid batteries
- Formula, baby food, diapers, and pacifiers
- Pet carriers, leashes, shot records, and food for each animal evacuating with you
- A good map showing county roads and highways
- Tire repair kit, booster cables, pump, and flares
- White distress flag
- Toys and games for children
- List of family phone numbers and addresses outside the area

STAY CONNECTED TO **3 NEWS**:



Hurricane Names

2011

- | | |
|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> Arlene | <input type="checkbox"/> Lee |
| <input type="checkbox"/> Bret | <input type="checkbox"/> Maria |
| <input type="checkbox"/> Cindy | <input type="checkbox"/> Nate |
| <input type="checkbox"/> Don | <input type="checkbox"/> Ophelia |
| <input type="checkbox"/> Emily | <input type="checkbox"/> Philippe |
| <input type="checkbox"/> Franklin | <input type="checkbox"/> Rina |
| <input type="checkbox"/> Gert | <input type="checkbox"/> Sean |
| <input type="checkbox"/> Harvey | <input type="checkbox"/> Tammy |
| <input type="checkbox"/> Irene | <input type="checkbox"/> Vince |
| <input type="checkbox"/> Jose | <input type="checkbox"/> Whitney |
| <input type="checkbox"/> Katia | |

2012

- | | |
|-----------------------------------|----------------------------------|
| <input type="checkbox"/> Alberto | <input type="checkbox"/> Leslie |
| <input type="checkbox"/> Beryl | <input type="checkbox"/> Michael |
| <input type="checkbox"/> Chris | <input type="checkbox"/> Nadine |
| <input type="checkbox"/> Debby | <input type="checkbox"/> Oscar |
| <input type="checkbox"/> Ernesto | <input type="checkbox"/> Patty |
| <input type="checkbox"/> Florence | <input type="checkbox"/> Rafael |
| <input type="checkbox"/> Gordon | <input type="checkbox"/> Sandy |
| <input type="checkbox"/> Helene | <input type="checkbox"/> Tony |
| <input type="checkbox"/> Isaac | <input type="checkbox"/> Valerie |
| <input type="checkbox"/> Joyce | <input type="checkbox"/> William |
| <input type="checkbox"/> Kirk | |

2013

- | | |
|------------------------------------|------------------------------------|
| <input type="checkbox"/> Andrea | <input type="checkbox"/> Lorenzo |
| <input type="checkbox"/> Barry | <input type="checkbox"/> Melissa |
| <input type="checkbox"/> Chantal | <input type="checkbox"/> Nestor |
| <input type="checkbox"/> Dorian | <input type="checkbox"/> Olga |
| <input type="checkbox"/> Erin | <input type="checkbox"/> Pablo |
| <input type="checkbox"/> Fernand | <input type="checkbox"/> Rebekah |
| <input type="checkbox"/> Gabrielle | <input type="checkbox"/> Sebastien |
| <input type="checkbox"/> Humberto | <input type="checkbox"/> Tanya |
| <input type="checkbox"/> Ingrid | <input type="checkbox"/> Van |
| <input type="checkbox"/> Jerry | <input type="checkbox"/> Wendy |
| <input type="checkbox"/> Karen | |



This chart is marked with vertical (longitude) and horizontal (latitude) lines, each representing 1 degree. A storm's position is given in these degrees.

KING CHART

NEWS

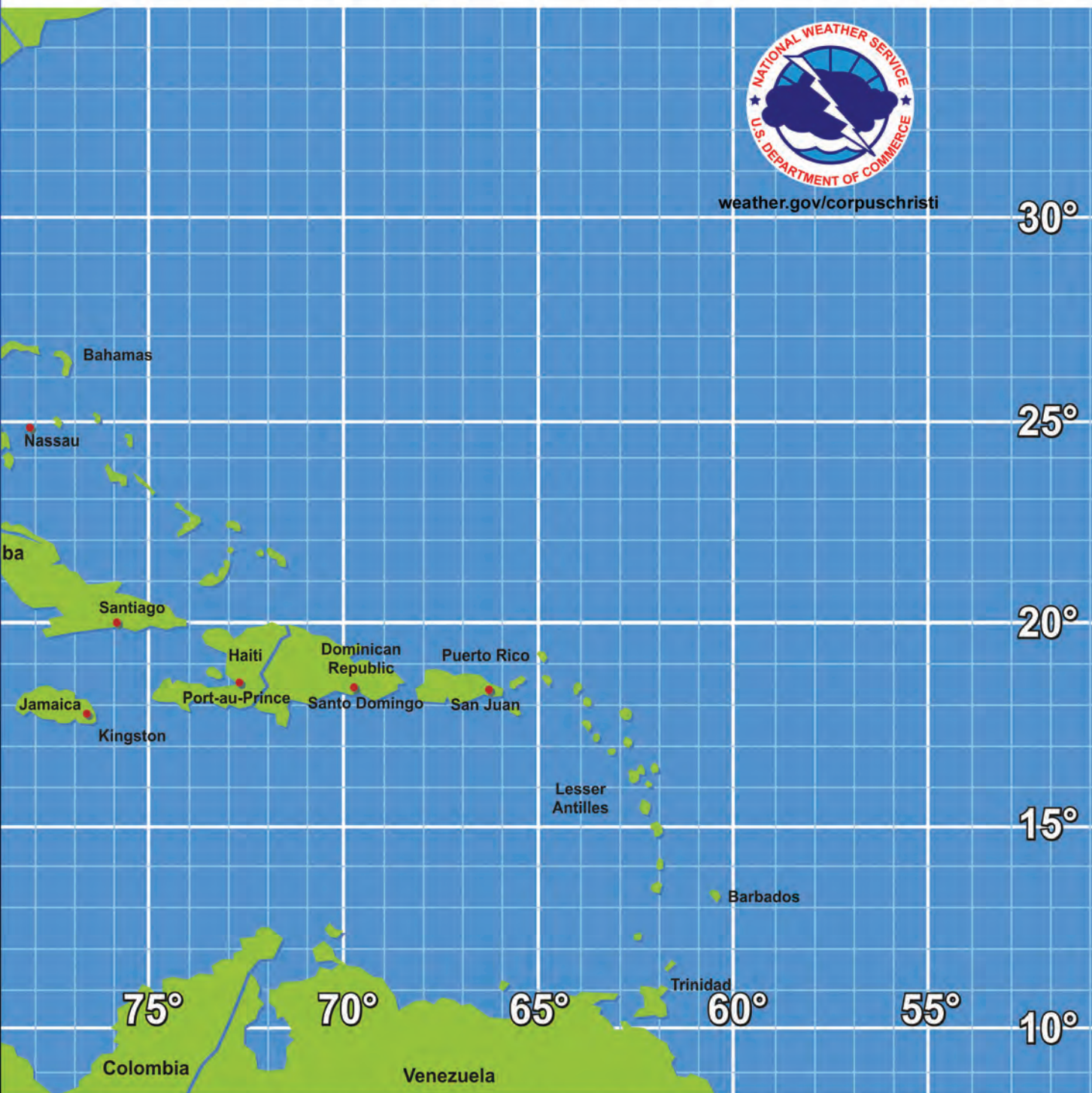
OR CALL: 814-WIND



Chief Meteorologist
Bill Vessey

Caitilin Espinosa

Dave Cochran



es. Find the given longitudinal number at the bottom of the chart. Follow it up where it intersects with the given latitudinal line. Place a mark on the intersection point (this is the hurricane's current position).

Hurricane Forecasts

The National Hurricane Center (NHC) in Miami, FL is the official source for tropical cyclone advisories and forecasts and is responsible for issuing tropical cyclone watches and warnings for the United States.

Weather Information

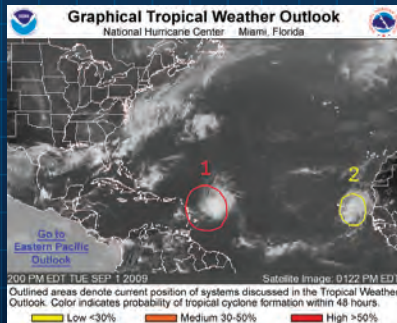
National Weather Service

www.weather.gov/corpuschristi

24 Hour Phone Recording: (361) 289-1861

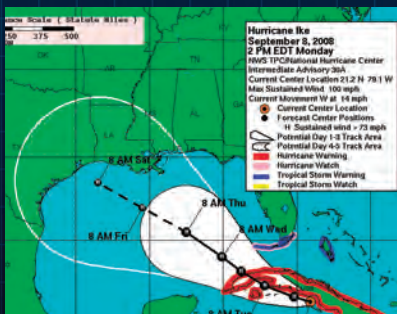
National Hurricane Center

www.hurricanes.gov



Graphical Tropical Weather Outlook

- New NHC product provides an overview of all tropical cyclone activity.
- Indicates areas of interest that have potential for tropical cyclone development.
- Moving the cursor over the highlighted areas will provide a more detailed text description.



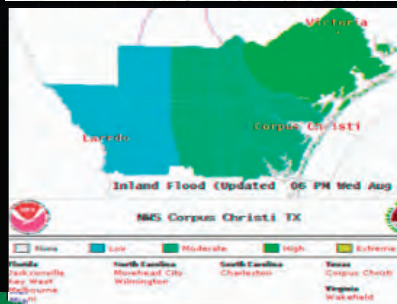
NHC Forecast Advisory

- Most recent position for a storm along with all coastline watches and warnings. Includes a 3 or 5 day track with error cone.
- Error cone represents a 5 year average error. Storms only stay within the error cone 67% of the time.
- DO NOT focus too closely on the exact track forecast - the little black line.



Storm Wind Field Graphic

- This graphic illustrates the size and shape of the tropical cyclone wind field.
- Some hurricanes have a broad and extensive wind field, with hurricane force winds extending well away from the center, while others have small circulations with hurricane force winds confined near the center.



Graphical Hurricane Local Statement (HLS)

- Issued by local NWS offices to summarize local impacts expected from the tropical cyclone.
- A text version of the Hurricane Local Statement is also available from your local NWS office which provides more detailed information on the tropical cyclone's local impacts.

Final Checklists

Actions to Take When a Storm is in the Gulf

- Listen frequently to radio, TV, or NOAA weather radio for bulletins and forecasts of the storm's progress.
- Double check items in your emergency supply kit.
- Fuel and service your vehicles.
- Inspect and secure mobile home tie-downs.
- Make sure you have supplies to survive on your own for at least one week if you plan on staying.
- Board up windows (if shutters do not exist) in case storm moves quickly and you have to leave.
TAPE PROVIDES NO PROTECTION!
- Store lawn furniture and other loose, light weight objects, such as garbage cans and garden tools.
- Get plenty of extra cash in case power goes out and ATMs do not work.
- Garage or store vehicles that are not being used.
- Follow instructions issued by local officials. **EVACUATE IMMEDIATELY IF ORDERED TO DO SO!**

Final Actions to Take if Leaving

- Turn off propane tanks.
- Unplug small appliances.
- Empty refrigerator and freezer.
- Turn off utilities if ordered to do so.
- Notify family members of your evacuation plans.
- Lower water level in swimming pool by one foot.
- Lock home securely.
- Board up remaining doors and brace garage door.
- Take pets with you.



Final Actions to Take if Staying

- Close storm shutters.
- Turn refrigerator or freezer to coldest setting and open only if necessary.
(25 pounds of dry ice will keep a 10-cubic foot freezer below freezing for 3-4 days.)
- Follow instructions from emergency managers and be prepared to turn off utilities if ordered to do so.
- Board up remaining doors, brace garage door, and remain inside. Stay away from boarded up windows.
- Take refuge in a predetermined safe room, such as an interior closet, bathroom, or hallway.
- Beware of the calm winds in the eye of the storm and do not venture outside. Some of the strongest winds may occur shortly after the eye passes.
- **DO NOT EXPECT EMERGENCY RESPONDERS TO BE OF ANY ASSISTANCE DURING A LANDFALLING HURRICANE!**

Remembering Hurricane Carla

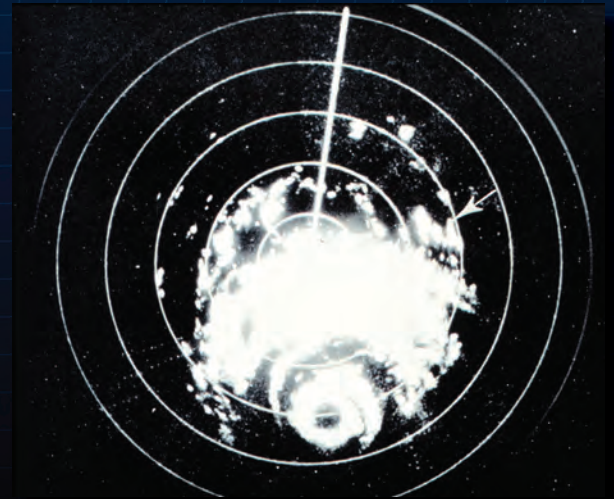


Above: Track of Hurricane Carla in 1961 and its associated intensity.

Hurricane Carla began as a tropical disturbance that formed over the western Caribbean Sea on September 3rd, 1961. By the 5th, Carla became the third named storm of the 1961 Atlantic Hurricane Season and quickly gained hurricane strength by the 6th. After skimming the Yucatan Peninsula, Carla entered the Gulf of Mexico and developed into a major hurricane, a status the storm maintained as it tracked northwest toward the Texas coastline.

During the daylight hours of September 11th, Hurricane Carla made landfall between Port O'Connor and Port Lavaca. At Carla's peak over the open waters of the Gulf of Mexico, a minimum central pressure of 931 mb, along with maximum sustained wind speeds greater than 150 mph, made Carla a category 5 hurricane on the Saffir-Simpson Scale. When the "eye" of Hurricane Carla made landfall early in the afternoon of the 11th, the intensity had slightly decreased, but the storm remained an extremely large and intense category 4 hurricane. Hurricane Carla remains the second most intense storm to ever strike the Texas coast. Sustained winds of 120 mph in areas from Port O'Connor up the coast to Galveston were reported as the "eye" of the storm came within 65 miles to the east of Corpus Christi.

Hurricane warnings were issued along the entire Texas coast on the 9th, prompting an immediate evacuation of all islands and low-lying coastal areas. A quarter million people fled the Middle and Upper Texas coasts to move inland to safety, which was the largest peace time evacuation in United States history, up until that time. Carla gained the attention of national media outlets while residents watched a young Dan Rather report live from Galveston's Seawall during the storm, which marked the first live television broadcast of a hurricane.



Above: Radar image of Hurricane Carla

Five Strongest Texas Landfalling Hurricanes Based on Pressure

Rank	Name	Year	Landfall Category	Minimum Pressure
1	Indianola	1886	4	925
2	Carla	1961	4	931
3	Galveston	1900	4	936
4	Rita	2005	3	937
5	Freeport	1932	4	941

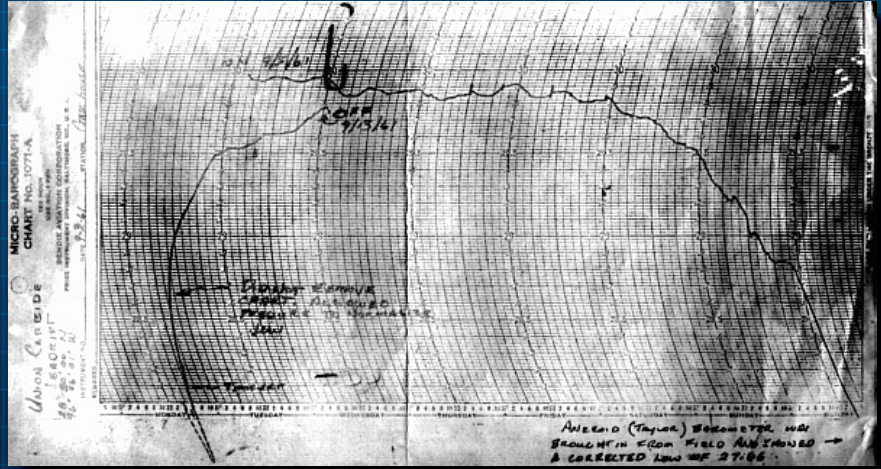
Remembering Hurricane Carla

The wind, not the rainfall, became the major hazard for the Coastal Bend area. Preliminary wind reports from locations hit hardest by Carla indicated sustained wind speeds of 115 mph in Matagorda, 110 mph in Victoria and 88 mph in Galveston. Peak wind gusts were estimated at 150 mph in Victoria and 170 mph at Port Lavaca! Average wind gusts of 80 to 90 mph were reported across Corpus Christi, with a peak wind of 81 mph recorded at the tower of the Weather Bureau Office, before failure of the instrument.

Rainfall amounts were heaviest from Port Lavaca up the coast to Galveston and within 50 miles inland, ranging from 10 to 16 inches across some locations. Galveston Airport recorded 16.49" of rain in a four-day period. Closer to home, at the airport in Corpus Christi, a relatively light 1.22" fell, while Victoria recorded a notable 6.25" of rain.

Carla's storm surge was devastating, rising to 10 feet above normal along a 300 mile swath of the Texas coast spanning from Port Aransas to the Sabine Pass. The storm surge peaked at the head of Lavaca Bay where water levels reached 22 ft above mean sea level. This is the highest recorded storm surge in Texas hurricane history. The extreme tides inundated downtown Port Lavaca with 2 feet of flood water and displaced fishing boats on highway 35. Port O'Connor and Indianola were leveled as the tides reached 15-17 feet above mean sea level. The storm surge produced extensive beach and inland damage to houses and businesses along the Texas coast. The dunes on Mustang Island were eroded as much as 15 feet due to the powerful storm surge.

Estimated damage costs exceeded \$2.36 Billion in today's (2010 Dollars), with property losses being the primary contributor. When it was all said and done, 46 people lost their lives to this historic hurricane.



Above: Barometric pressure trace made as Hurricane Carla was making landfall.



Indianola Before Hurricane Carla



Indianola After Hurricane Carla

Rip Current Safety

Hurricane Surf

Hurricanes bring large waves to nearby beaches that are dangerous for beach goers. High waves, when combined with the high tide, storm surge, and wind and wave setup, can create a serious threat to both lives and property. Jetties and piers typically amplify the size of the waves, causing an even more dangerous situation. Hurricane waves can injure or drown those who enter the water, so **remember: If in doubt, don't go out!**

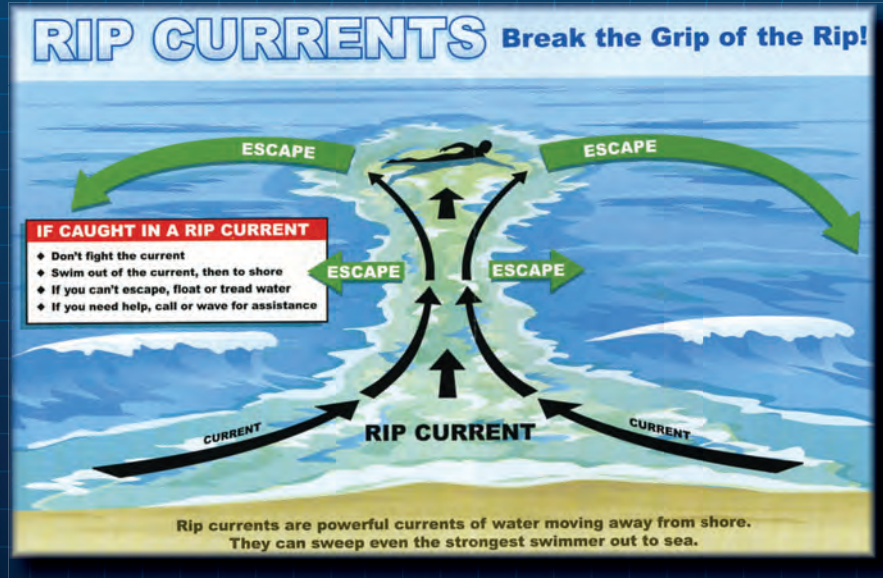


Photo: gscottimaging.com



Rip Currents

Along with big surf come strong rip currents. Rip currents are the leading surf hazard for all beach goers and result in over 100 drownings every year in the United States. The strength and size of rip currents are related to the size of the surf and wave period. Rip currents typically form at the low spots in the surf, at the breaks in the sandbars, and near jetties and piers.

If caught in a rip current, don't panic, but swim parallel to the shore. The current is usually only about 50 feet wide and you should be able to swim out of it. At that point, you can swim back to shore. If you are still unable to reach the shore, draw attention to yourself: face the shore, wave your arms, and yell for help.

College Student Preparation

Student Information Checklist

- Assure that all contact information and emergency contact information is accurate with your campus's registrar's office.
- If your campus offers an emergency management communication system, register as a user of the system.
- Plan your method of evacuation and your destination before a storm enters the gulf.
- Monitor local radio and TV stations for updates.
- Contact your campus Student Affairs Office if you need assistance with evacuation.
- If you require any assistance due to a disability-related accommodation, please contact your campus Disability Services Office to make necessary arrangements.
- Communicate with your family regarding status and location
- If your campus is evacuating, you will not be allowed to remain on-campus and it is highly recommended that you leave the city. Do not go to a coastal location.
- Take your driver's license, student I.D. card, and a copy of your housing lease as well as medical insurance cards and other important documents when you evacuate.
- If you bank with a local bank or credit union whose infrastructure may be damaged by the storm, withdraw some funds as you may not have access to them once you leave the area.
- International students must take passports with US student visa inside, I-20, I-94, student I.D. and class schedule.
- If using personal transportation, take as many of your valuable or irreplaceable items as you are able.
- If driving, make sure all roads that you are driving are open and safe. You can call the Department of Transportation at 1-800-452-9292 or check on-line for conditions at www.txdot.gov
- Follow baggage limits if participating in an assisted evacuation program.
- Take a 30-day supply of medications in original pharmacy containers.
- Make a record of any valuables left behind (description, serial numbers, etc). Take pictures of all belongings.
- If you are evacuating to a shelter, make appropriate arrangements for pets. Most shelters do not accept pets.
- Do not plan to return to campus until an all-clear is given (monitor media and campus web-site).



Preparing Your Room

- | | |
|---|--|
| <input checked="" type="checkbox"/> Unplug all electronics and cover them in plastic | <input checked="" type="checkbox"/> Empty refrigerator |
| <input checked="" type="checkbox"/> Shut and lock your window and close your blinds | <input checked="" type="checkbox"/> Take valuables |
| <input checked="" type="checkbox"/> Store items off the floor and away from windows | |
| <input checked="" type="checkbox"/> Take all items off balconies and out of yards | |
| <input checked="" type="checkbox"/> Follow any additional instructions by your landlord | |



Evacuation

Evacuees need to consider the projected path of the hurricane when choosing an evacuation route and destination. Evacuation studies estimate that it takes between 23 and 42 hours to evacuate the coastal bend in advance of tropical storm force winds. This underscores the need for coastal residents to have an evacuation plan. When evacuating, be sure to check local weather and highway conditions before departing. When local authorities order an evacuation of your area, leave immediately!

Below: The three main routes away from the coastal bend. These can quickly become congested.



Texas Road Information

TXDOT Road Conditions

1-800-452-9292 or www.txdot.gov

TXDOT Corpus Christi Office

1-361-808-2300

Emergency Broadcast Information

KLUX Radio 89.5 FM

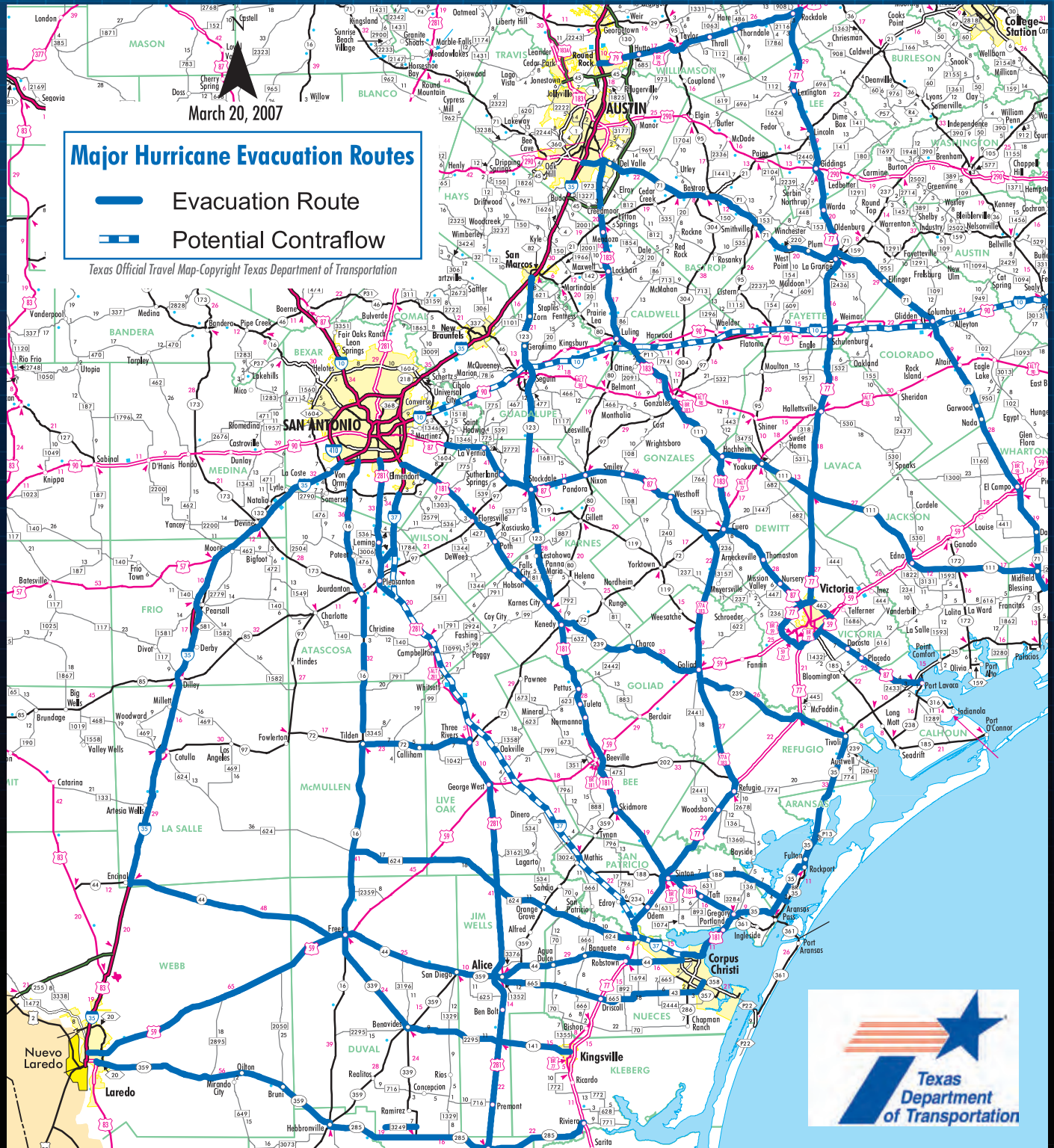


Final Actions before Evacuating

- Follow evacuation orders provided by your local officials. Once the evacuation order has been given, LEAVE IMMEDIATELY!
- Take your Hurricane Supply Kit with you.
- Leave as early as possible to avoid heavy traffic and hazardous weather.
- See TXDOT map on the next page for an illustration of primary and alternate evacuation routes. Remember that the primary routes often become congested quickly.
- Do not stay in a mobile home near the coast under any circumstance.
- Remember that large boats and travel trailers may not be allowed to cross the JFK causeway or Harbor Bridge once high winds commence.
- Prepare to stay at your evacuation destination for a week or more, as re-entry into the affected area may be restricted.

Evacuation

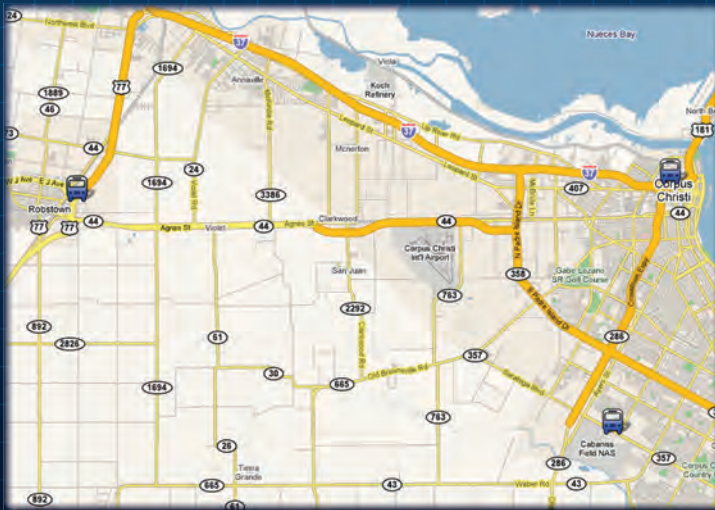
Suggested Evacuation Routes



Bus Evacuation

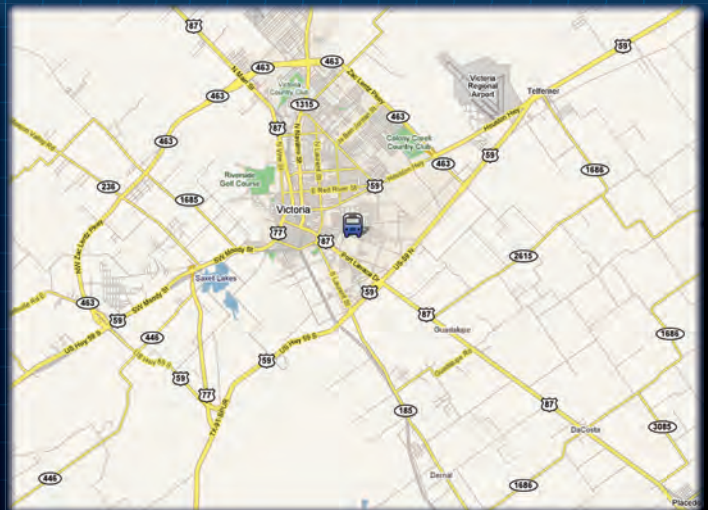
Bus Loading Points will open on an as-needed basis. DO NOT go to Bus Loading Points unless directed by public officials.

Call 2-1-1 and register every year if you will need bus transportation. One piece of luggage per person. Have ID and any medications.



Corpus Christi

- Any RTA Bus Stop
- Special Needs - C.C. Gym on Saratoga
- Nueces County Memorial Agriculture Center (Old Showbarn), Robstown



Victoria

- Victoria Community Center



Kingsville

- Kleberg County Courthouse
- National Guard Army Parking Lot



Rockport

- Live Oak Elementary



Port Lavaca

- Bauer Community Center

Emergency Information

ARANSAS COUNTY

- **Rockport Police**
361-729-1111
- **County Sheriff**
361-729-2222

BEE COUNTY

- **County Emergency Management**
361-362-3271 www.co.bee.tx.us
- **County Sheriff**
361-362-3221

CALHOUN COUNTY

- **County Emergency Management**
361-553-4400
- **County Sheriff**
361-553-4646

GOLIAD COUNTY

- **Goliad County Judge**
361-645-3337
- **County Sheriff**
361-645-3451

JIM WELLS COUNTY

- **County Emergency Management**
361-668-1018
- **Alice Emergency Management**
361-664-3111
- **Jim Wells County Sheriff**
361-668-0341

KLEBERG COUNTY

- **County Emergency Management**
361-595-8527
- **County Sheriff**
361-595-8500

LIVE OAK COUNTY

- **County Sheriff**
361-449-2271

NUECES COUNTY

- **County Emergency Management**
361-888-0513 www.co.nueces.tx.us
- **City of Corpus Christi**
361-826-1100 www.cctexas.com
- **Port Aransas City Hall**
361-749-4111 www.cityofportaransas.org
- **City of Robstown**
361-387-2522 www.rfd@cityofrobstown.com
- **City of Bishop**
361-584-2567

REFUGIO COUNTY

- **County Sheriff**
361-526-1698

SAN PATRICIO COUNTY

- **County Emergency Management**
361-364-9650
- **Ingleside Police**
361-776-2531
- **Portland Police**
361-777-4444

VICTORIA COUNTY

- **City/County Emergency Management**
361-485-3362
- **City/County Emergency Hotline**
361-485-3611



Additional Information

US Department of Homeland Security
www.ready.gov

National Red Cross
www.redcross.org

FEMA
www.fema.gov

**Community Resource Information:
Do Not Call 911 for Non-Emergencies!**



Returning Home



IF YOU EVACUATED THE AREA, WAIT FOR AN ALL CLEAR FROM THE CITY OR COUNTY BEFORE ATTEMPTING TO RETURN TO YOUR HOME. BE PREPARED TO SHOW PROOF OF RESIDENCE BY HAVING A COPY OF YOUR LATEST UTILITY BILL.



FEMA News Photo



Debris Cleanup

- Cities and counties will publish a schedule for debris pick-up and removal. Debris cannot be removed from private property.
- Construction materials, vegetative debris, household hazardous waste and household appliances will need to be placed into separate piles and moved to the curbside for pick-up.

FEMA News Photo



General Cleanup

- Be cautious of structural damage and downed power lines. Do not attempt to move structural supports or large pieces of debris.
- DO NOT run power generators indoors. Inhalation of carbon monoxide from the exhaust can cause death. Ensure exhaust is well ventilated.
- DO NOT use open flames indoors.
- Restrict your driving to emergency use only. Road conditions may not be safe until road debris is cleared.

FEMA News Photo



Water

- Listen for instructions regarding public water supply. Use only bottled, boiled or treated water until you know that your water supply is safe.
- You can use household chlorine bleach to treat water for drinking or cleaning. Add 1/8 teaspoon of bleach per gallon of clear water or 1/4 teaspoon of bleach per gallon if water is cloudy. Allow water to stand for 30 minutes before using.

Returning Home

Utility Cleanup

FEMA News Photo



- Check for gas leaks. If you smell or hear gas leaking, leave immediately. DO NOT use the phone or turn on lights in your home. Call the gas company from a neighbor's phone.
- Report any visible damage of power lines to the electric company. Turn off power at main breaker if any electrical equipment or circuits have been exposed to water.
- DO NOT connect generators to your home's electrical circuits. If a generator is on line when electrical service is restored, it can become a major fire hazard. Also, lineworkers working to restore power will be endangered if a generator is hooked up to the home's circuits.
- It is likely that an electric company other than your own will reconnect the lines to your home; however, they can not turn the service back on. Only your electric company can actually turn the power back on to your house.

Sewage Cleanup

- If you suspect water or sewage lines are damaged, do not use your plumbing (toilets, sinks, etc.). Contact the water company or a plumber for repairs.
- A chemical portable commode can be created by the following:
 - ✓ Use 5 gallon buckets with tight lids, lined with heavy duty plastic garbage bags.
 - ✓ Add kitty litter to the bucket as a disinfectant and deodorizer. Keep lids on firmly.
 - ✓ Keep buckets in a cool, dark place. Clean and disinfect buckets immediately.
- Your toilet can also be used by flushing until the bowl has no water. Then, line with heavy duty trash bags and disinfect with chlorine bleach after each use. Remove waste to an outside location.
- If significant sewer outages have occurred, instructions for disposal of human wastes will be announced.
- DO NOT dispose of human waste through your regular trash!

Interior Cleanup

- Disinfect and dry interior buildings and items inside. This will prevent growth of some bacteria, viruses, mold, and mildew that can cause illness.
- Clean walls, floors, and counter tops with soap and water. Disinfect them with a solution of 1 cup of bleach to 5 gallons of water.
- Wash all clothes and linens in hot water. Air dry and spray all unwashable items with disinfectant. Steam clean carpets. Throw away all items touched by water that cannot be disinfected.

3 NEWS
First Edition
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& CAITILIN ESPINOSA**



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